

MECHANICS 2 SCHEME OF WORK

Topic	Objectives	Notes	Resources	ICT	Formal Homework
Kinematics of a particle moving in a straight line or plane. (8 lessons)	Motion in a vertical plane with constant acceleration, eg under gravity.		1.1		
	Simple cases of motion of a projectile.		1.2		
	Velocity and acceleration when the displacement is a function of time.	The setting up and solution of equations of the form $\frac{dy}{dx} = f(t)$ or $\frac{dv}{dt} = g(t)$ will be consistent with the level of calculus in P2.			
	Differentiation and integration of a vector with respect to time.	For example, given that $\mathbf{r} = t^2\mathbf{i} + t^{3/2}\mathbf{j}$, find $\dot{\mathbf{r}}$ and $\ddot{\mathbf{r}}$ at a given time.	1.3		
Centres of mass. (5 lessons)	Centre of mass of a discrete mass distribution in one and two dimensions.		2.1		
	Centre of mass of uniform plane figures and simple cases of composite plane figures.	The use of an axis of symmetry will be acceptable where appropriate. Use of integration is not required. Figures may include the shapes referred to in the formula book. Results in the formulae book may be quoted without proof.	2.2		
	Simple cases of equilibrium of a plane lamina.	The lamina may i) be suspended from a fixed point. ii) Free to rotate about a fixed horizontal axis. iii) To pu on an inclined plane.	2.3		
Test 1					

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Topic	Objectives	Notes	Resources	ICT	Formal Homework
Work and Energy (5 lessons)	Kinetic and potential energy, work and power. The work-energy principle of conservation of mechanical energy.	Problems involving motion under a constant resistance and/or up and down an inclined plane may be set.	3.1 3.2 3.3		
Collisions (8 lessons)	Momentum as a vector. The impulse-momentum principle in vector form. Conservation of linear momentum. Direct impact of elastic particles Newton's law of restitution. Loss of mechanical energy due to impact. Successive impacts of up to three particles or two particles and a smooth plane surface.	Candidates will be expected to know and use the inequalities $0 \leq e \leq 1$ (where e is the coefficient of restitution) Collision with a plane surface will not involve oblique impact.	4.1 4.2 4.3 4.4 4.5 4.6		
Statics of rigid bodies (5 lessons)	Moments of a force. Equilibrium of rigid bodies.	.	5.1 5.2		
Test 2					